

Activity Title:

Colonising space – the function of runners, suckers, berries and seeds

Focusing question

What are some of the methods used by dune plants to colonise space?

Resources required

- Fact sheet – Colonising space: the function of runners, root suckers, berries and seeds – page 73
- Fact cards – page 75
- Copying: photocopy fact sheets – one per student or use a digital image of the fact sheet. Photocopy, cut and laminate fact cards – enough for one per small group.

Prior learning

2a Native dune plants – who lives where and why?

Method

- 1 The objective of this activity is to investigate the function of runners, root suckers, seeds and berries; exploring methods used by dune plants to colonise space on the dunes.
- 2 Discuss the concept of 'colonising space'.
- 3 Independently read the fact sheet **Colonising space: the function of runners, root suckers, berries and seeds**.
- 4 In groups use the fact cards to identify key characteristics and functions of runners, root suckers, berries and seeds as well as examples of plants that use these methods to colonise space on the dunes. There are five fact cards to match each of the following – runners, root suckers, berries, seeds.
- 5 As a class review correct answers (answers can be obtained from the ordering of cards on the original fact card sheet).
- 6 Discuss the following:
 - Why do you think plants often use more than one of these strategies to colonise space?
 - Why is colonising space important as a function for dune plants?

Possible next steps

- 2d Plant ID – an exercise in native dune plant species identification.
- 2e Plants of the local sand dune community – a field activity exploring what plants live on the local dunes and on which part of the dunes different plants live. Students could draw the different plant species onto the Beach diagram.

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Environmental Education Aspect:

About the environment

Environmental Education Concept:

- Biodiversity
- Interdependence

Curriculum Links:

- Social Science
- Science

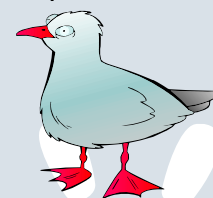
Suggested Curriculum Level:

Any

SUSTAINABILITY TIPS!

Laminate fact cards for future re-use.

Instead of photocopying fact sheets for each student, project a digital copy and save paper.



Fact sheet – Colonising space: the function of runners, root suckers, berries and seeds

Dune plants use different strategies for expanding and colonising new space. These strategies include the use of runners, seeds, berries and suckers. Seeds and berries are part of the reproductive process of dune plants. Root suckers and runners are methods used by dune plants to expand and colonise new areas of sand with new growth from the original plant.

Runners

Foredune plants such as kōwhangatara and pīngao have runners that are very salt tolerant so they can grow very aggressively and colonise the sand quickly. Without runners, plants like pīngao and kōwhangatara wouldn't be able to trap sand as effectively as they do. The ability of these plants to trap sand is really important after storms.

Big storms move sand off-shore, eroding the beach. When that sand is moved off-shore it sits out at sea and then when the fine weather returns, calm weather waves bring the sand back on-shore. When this happens the runners run down onto the beach, literally, and start to trap the sand as it comes back on to shore. It's kind of a winter/spring phenomenon – you get the storms in winter that take the sand off-shore and then calm weather following in late winter/early spring that bring sand back up onto the beach. Nature times things perfectly as spring time is when the runners are growing rapidly. Plants with runners are normally found in the foredunes.



Pīngao has strong runners that are sent out from the plant to trap sand and colonise new areas


Root suckers

There are some sand dune plants that have root suckers. Waiuu-o-kahukura or shore spurge (*Euphorbia glauca*) has root suckers that move quite quickly underground and expand out from the original plant area. These suckers put up shoots from the roots and expand out that way. This strategy is probably useful on scarp face areas after storms because those roots might be left exposed. As the sand comes back on shore and the roots start to get inundated with sand again, the shoots can grow up through the sand and start to colonise that bare sand.

Unfortunately we don't get to see many examples of this in the Bay of Plenty as this plant *Euphorbia glauca* is very palatable to rabbits. That's why it's so rare. Rabbits love it to bits! Every time Coast Care plants new ones; they get eaten.



*Waiū-o-kahukura or shore spurge (*Euphorbia glauca*) has root suckers that move quite quickly underground and expand out from the original plant area.*



Waiuu-o-kahukura or shore spurge (*Euphorbia glauca*)

Seeds

As an example of the function of seeds on the dunes we can look at the foredune species, Hinarepe (*Austrofestuca littoralis*) or sand tussock.

This foredune plant doesn't have runners but produces huge amounts of seed. It looks like it is a very short lived plant and so that's another reason seed production is really important – to help it survive in the long term. It produces large quantities of seed, it can quickly reproduce itself and the seed blows around quite a lot and so the seeds regenerate the plant after storms. It flowers around October and seeds early summer. If those seeds are blown around by the wind then they can get down onto fresh sand and colonise new areas of sand.

Kōwhangatara or spinifex (*Spinifex sericeus*) has a unique and effective method of dispersing its seeds – its seed heads go tumbling down the beach in balls!



Hinarepe is a short lived plant that produces huge amounts of seed



Kōwhangatara or spinifex seed heads

Berries

Berries are a very good food source for birds, and also lizards. Once upon a time there were lots and lots of skinks and geckos down on the dunes – and these animals would eat berries. They are very good at distributing the seed from the berries – more so than birds. The reason for this is that some birds have gizzard stones which destroy the seeds.

Pheasants feed almost entirely on pōhuehue, wire vine or *Muehlenbeckia complexa* berries; and their gizzard stones destroy the seed. Many native birds don't have gizzard stones and of course none of the skinks and geckos do. Skinks and geckos and native birds help distribute seeds from the berries they eat.



Pōhuehue, wire vine or Muehlenbeckia complexa has an abundance of silver berries in autumn and early winter.

Find out more

If you want more information on Coast Care groups and programmes contact:

Coast Care Coordinator, Bay of Plenty Regional Council

Telephone: 0800 884 880

Facsimile: 0800 884 882

Email: coastcare@boprc.govt.nz

Website: www.boprc.govt.nz


Address: 5 Quay Street, PO Box 364, Whakatāne 3158



Bay of Plenty Regional Council in partnership with Tauranga City Council; Whakatāne, Western Bay of Plenty, and ō-pū-tiki District Councils; and the Department of Conservation.

Fact cards

Runners	Are good for trapping sand
	Are a method by which a species of plant can colonise new space on the dunes
	Are a special feature of foredune plants
	Expand out from the original plant area
	Pīngao is an example of a plant that has these
Seeds	Are a method by which a species of plant can colonise new space on the dunes
	Can be dispersed by wind
	Are a method of plant reproduction
	Hinarepe or sand tussock produces large amounts of these to compensate for being short lived
	Kōwhangatara or spinifex provides an example of a particularly effective use of wind to disperse these



Berries	Can be dispersed by birds
	Can be dispersed by geckos and skinks
	Are a method by which a species of plant can colonise new space on the dunes
	Contain seeds
	Pōhuehue (Wire vine) or <i>Muehlenbeckia complexa</i> has an abundance of these in autumn and early winter
Root suckers	Move quite quickly underground
	Expand out from the original plant area
	Put up shoots from the roots and expand out that way
	Are a method by which a species of plant can colonise new space on the dunes
	Waiū-o-kahukura or shore spurge (<i>Euphorbia glauca</i>) is an example of a plant that has these

